

Development of a Research Infrastructure for the University of Miami

School of Nursing and Health Studies Simulation Hospital

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Executive Summary

The goal of this Capstone Project was to create a research development and investigator support program to be implemented at the new Simulation Hospital being built on the campus of the University of Miami's School of Nursing and Health Studies. To meet this goal (a) a review of the current literature was conducted, with a focus on the rapidly evolving fields of research administration and simulation research, and (b) a needs assessment of the existing School of Nursing and Health Studies research infrastructure was implemented. A 31-item survey was developed for this project to assess 6 areas of interest: (1) Current Research Infrastructure; (2) Simulation Research Opportunities; (3) Simulation Personnel Readiness; (4) Simulation Equipment Readiness; (5) Plan Readiness; and (6) Regulatory Knowledge. All 49 full-time faculty, along with 5 members of the simulation research team, were invited to respond to the survey. A total of 25 individuals (46%) completed the survey. Overall, respondents viewed the current research infrastructure favorably as regards its support of faculty in identifying funding opportunities, writing grant proposals and disseminating study findings, but were somewhat less enthusiastic about the degree to which the school facilitates mentoring of early-career faculty. Respondents expressed a high degree of interest in learning more about simulation research and about opportunities to engage in simulation research. The capacity of the simulation team to conduct simulation research was viewed favorably. Results suggest that many respondents did not have sufficient information to evaluate the readiness of the school's simulation plan and equipment, as evidenced by a large proportion of "don't know" responses to these items. Respondents strongly endorsed the importance of regulatory compliance, quality assurance, and data-sharing with other institutions. Finally, a research infrastructure plan was developed that focuses on 5 major areas: (1) leadership and management teams; (2) data management; (3) building administrative team capacity; (4) faculty support; and (5) dissemination and marketing.

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1. INTRODUCTION

1.1 A Simulation Hospital for the 21st century.

The University of Miami School of Nursing and Health Studies is building a new facility – a Simulation Hospital. This 5-story, 41,000-square-foot healthcare education facility will replicate the activities flow of clinical practice, hospital and home-based care environments, allowing for simulated treatment of patients across the life-span continuum. It will also be a locus for interprofessional collaborations, where nursing students, nurses, physicians and other healthcare professionals will work in teams, learning how to improve patient safety outcomes. With a projected completion date of March 2017, it is expected that this facility will be a unique and valuable resource for research not only for University of Miami faculty but also for the corporate healthcare field and for faculty from other universities in the community and beyond.

1.2 What is simulation in healthcare education?

Simulation is a rapidly growing approach to the preparation of healthcare professionals that uses increasingly complex technologies to create realistic, interactive and immersive scenarios that simulate real-life healthcare situations and challenges. Learners develop and practice healthcare skills on high-tech “simulators” that look and react like real patients, and may also interact with “standardized patients” (i.e., actors trained to play the role of patients with various health conditions). Students are able to perform myriad healthcare tasks and procedures, such as conducting routine physical examinations, drawing blood, delivering a baby, administering anesthesia, performing surgery, and delivering emergency and trauma care. By

practicing their skills in simulated environments, they are able to gain greater levels of proficiency before working with real patients; thus, simulation helps to promote patient safety in real-world healthcare settings. Simulation also can be used to address significant issues such as how to respond to ethical dilemmas, how to increase patient safety, and how to work and communicate effectively within interprofessional teams of healthcare providers (Lateef, 2010).

1.3 Creating a research infrastructure for the Simulation Hospital.

Universities continue to serve as the primary engine for discoveries leading to innovations. The School of Nursing and Health Studies leadership has made clear its intent to leverage this fact, along with the resources and opportunity provided by the new Simulation Hospital, to increase the University of Miami's and its own research portfolio. The continued existence of the School of Nursing and Health Studies' research programs depends on two factors: the ability to secure grants and contracts and the effective management of grants and contracts. A robust research infrastructure customized to the needs of simulation-based research is crucial to this aim.

Engaging faculty investigators (hereinafter referred to as investigators) in learning how to compliantly manage sponsored projects is a consistent challenge for research administrators. Regulatory oversight of their research programs is not a faculty members' major concern; the conduct of their science is. Although institutions and funding agencies expect good stewardship of grants and contracts, many scientists view any time spent learning to effectively manage sponsored projects as "administrative burden that interferes with their ability to carry out cutting-edge research" (Mervis, 2015).

Investigators who are well-informed about the challenges and demands of today's scientific funding arena will be more successful in identifying funding opportunities and in writing competitive grant proposals. In the current environment, funding agencies are increasingly giving preference to collaborative projects featuring an interdisciplinary cast of investigators. Additionally, the ability to demonstrate high-level standardized data collection and data quality assurance procedures is important to maintaining a productive relationship with sponsoring organizations. Finally, the very nature of the research that will be conducted at the Simulation Hospital (i.e., that fact that it is *simulation*-based) science adds its own layer of complexity to the task of establishing a comprehensive research development and investigator training program for this new facility.

1.4 Problem addressed by the Capstone Project.

In the spring of 2017, the SONHS will inaugurate a one-of-a-kind facility that will offer new research opportunities as well as challenges. The new Simulation Hospital will provide significant opportunities for research on simulation education as well as for research that relies on simulation technology. However, with these increased opportunities come increased demands on the existing research infrastructure of the school. The SONHS research administration currently supports the implementation of a sizable portfolio in behavioral and healthcare research through a robust and comprehensive (e.g., Quality assurance; pre-award and post-award support) research infrastructure. However, no infrastructure existed that specifically addressed the distinct challenges involved in conducting simulation-based research, as well as the challenges of overseeing research in the new, high-tech environment of the Simulation Hospital.

Research administration at the Simulation Hospital will have to address the traditional obstacles faced in supporting scientific research, as well as new and unforeseen challenges

unique to the field of simulation research and to the new environment of the Simulation Hospital. To this end, there was a need to develop and activate a research infrastructure that would allow the SONHS to “hit the ground running” as soon as the facility opens. Indeed, such a plan would support faculty to begin applying for research funding well in advance of the facility’s inauguration date, in anticipation of the new resources that will be available when the Simulation Hospital is completed. Because of its size, scope, and unique aspects (e.g., challenges, technologies), the new facility required its own research infrastructure plan and oversight. The needs assessment conducted as part of this project focused on identifying the anticipated research infrastructure needs of the Simulation Hospital, with the goal of expanding the school’s existing research infrastructure to integrate the needs of the new facility.

1.5 Past challenges faced by SONHS research administration.

The existing SONHS research administration has faced and tackled many of the challenges commonly encountered in academic research settings in supporting faculty efforts to seek grants, to successfully manage and implement their studies, and to disseminate study findings. These challenges include the shortage of trained administrative personnel, lack of financial resources, busy and overextended faculty, and faculty lacking training and skills (e.g., managerial, writing). Based on this experience, it is anticipated that the SONHS research administration will face similar challenges in implementing a program of research at the Simulation Hospital once it is inaugurated. At the same time, the unique, self-contained environment of the new facility, and its focus on futuristic technologies, introduces potential new challenges that must be identified and addressed on an ongoing basis.

1.6 Significance of the project.

Simulation-based education and research is the wave of the future. With its new Simulation Hospital, the SONHS is at the vanguard of this emerging field of research. The school has the potential to be a national and global leader in simulation-based education and research and to make significant contributions in this area. At the same time, the field of research administration must be able to accommodate the new challenges imposed by simulation-based research, which may differ in important ways from the challenges of traditional research. Thus, this Capstone Project is contributing to the field of research administration by articulating a model for a research administration infrastructure with potential application in other simulation-based research and education settings.

1.7 Relevance to research administration.

Without effective research administration to support the process of applying for and implementing simulation-based research (including IRB/ethical issues and faculty development), the Simulation Hospital and the SONHS will not be able to achieve their optimal and maximal potential to contribute to this emerging field. The cutting-edge research administration infrastructure plan developed in this project will support the SONHS' continued leadership in the field, with ultimate benefits to healthcare education as well as to critical areas such as patient safety, interprofessional communication, and interdisciplinary collaboration in research and education. This project addressed the identified problem by creating a comprehensive plan for a research administration infrastructure for the new Simulation Hospital, to be implemented as soon as the new facility is inaugurated.

1.8 Project goals.

The overall goal of this Capstone Project was to develop a comprehensive research development and investigator support program to be implemented at the Simulation Hospital once it opens. To meet this goal (1) a needs assessment of the existing School of Nursing and Health Studies research infrastructure (i.e., the faculty and simulation team survey) and (2) a review of the current literature on simulation and research infrastructure were conducted.

The specific objectives were as follows:

1. Design formal data collection and data quality assurance procedures that will form part of the Simulation Hospital infrastructure.
2. Create a tracking mechanism for all research conducted at the Simulation Hospital. Such a system should track both funded and unfunded research.
3. Design a plan for assembling a Simulation Hospital Research Planning Committee to:
 - a. Identify and proactively pursue, or support other School of Nursing investigators in pursuing, collaborative interdisciplinary simulation-based scientific opportunities that extend beyond interprofessional education projects. This is in keeping with the idea that “research associated with simulation encompasses both research *about* simulation (e.g., its technology, its pedagogy, its impact and outcomes) and research that *uses* simulation as a tool to study other key things (Palaganas, Maxworthy, Epps & Mancini, 2014).
 - b. Formulate and oversee a dissemination plan for simulation research findings.

2 LITERATURE REVIEW

2.1 The evolving role of the 21st century research administrator.

Scientific research has led to significant positive impacts on national and global quality of life and technological progress, a result that would not have been possible without the equally

significant financial and human investments in the research enterprise. Research administrators play an increasingly pivotal role in helping to ensure the success of every study, working to guide and support investigators through myriad administrative, financial and regulatory demands. At the same time, research administrators are accountable to their institutions and to the larger society that helps to fund this work and that ultimately benefits from it (Chronister & Kulakowski, 2011).

The research administrator is charged with creating an environment in which researchers are free to do their best and most innovative work, while at the same time maintaining the highest standards of integrity in all aspects related to the conduct of research. This goal can be achieved through a carefully constructed infrastructure that is built on a clear institutional vision, strategic plan, and metrics for achievement. Research administrators are also “brokers of innovation” who play a key role in creating pathways to ensure that innovative research findings are translated into programs and products that can help to address social, cultural and technological challenges (Chronister & Kulakowski, 2011).

The research enterprise and the administrative infrastructure that supports it have grown at a rapid pace over the past 25 years, and during this time the research administrator has evolved into a professional who functions at the highest institutional levels. Major changes that have been observed include (1) a move away from fundamental (i.e., basic and applied) research and toward developmental (i.e., functional and problem-based) research that is “specifically directed toward solving societal problems”; (2) an increased orientation toward multidisciplinary and international research; and as a result, (3) a demand for higher-

level technological and financial management skills among research administrators (Kulakowski & Chronister, 2011a).

This rate of growth and transformation is expected not only to continue, but to accelerate; thus, today's research administrator must always be oriented to the future in order to keep pace with technological and societal changes that impact the conduct of research. They must be able to anticipate or to respond quickly to changes in the political climate that can impact federal or state funding priority areas and availability of funds that can lead to new or expanded research opportunities as well as, on the downside, to restriction or elimination of funding for some areas of research. Additional areas of knowledge that the research administrator must master include federal and state policies, funding and policy trends, and fiscal challenges involved in calculating and meeting the true direct and indirect costs of conducting research – total costs that are not always completely covered by the grant or contract, such as the expense involved in complying with unfunded policy mandates such as HIPAA (Kulakowski & Chronister, 2011a).

One example of changing federal priorities and regulations can be seen in the shift to increased funding of defense-related and national security projects following the September 11, 2001 attacks on the nation. Accompanying this shift were new export control regulations that place restrictions on, or in some cases block, international students, trainees and researchers from engaging in certain kinds of research in the US. For academic institutions seeking to engage in international research and exchange (such as the University of Miami), these regulations represent an additional challenge that must be negotiated by the research administrator, who must be prepared to advise faculty members who are developing international research studies as to whether these restrictions are applicable to their

proposals (Kulakowski & Chronister, 2011a). Moreover, the need for researchers who are familiar with cultural issues and/or who are fluent in languages other than English, coupled with federal restrictions on working with international researchers, reinforces the need for well-prepared US citizens or legal residents from racial and ethnic minority backgrounds. Another important shift that has occurred in the past 15 years is the federal government's decreased emphasis on the Responsible Conduct of Research (RCR), which they now view as a potential administrative burden on institutions. The institutions themselves also tend to view meeting RCR mandates as a costly activity that is not covered by indirect costs. In response to this decreased federal regulatory emphasis, some institutions have begun to decentralize their RCR activities to the college or departmental level. Decentralization of RCR means that RCR standards and procedures within a given institution may begin to vary widely across colleges or departments, calling for the research administrator to be familiar with these diverse rules and procedures (Kulakowski & Chronister, 2011a).

Finally, a shift toward electronic and paperless offices is potentially a time- and money-saving development, but it brings with it new demands for skills and approach to the work. Most funding opportunities are not announced via hard copy mailings. The research administrator must be familiar with databases and funding websites and be easily able to navigate them to locate potential resources and to complete and submit the application electronically. A post-award research administrator must be able to track progress on the grant or contract and submit progress and financial reports as required (Kulakowski & Chronister, 2011a).

In summation, research administration has grown into a highly complex and specialized profession with its own professional associations, in the US as well as around

the world. The growth of international research collaborations will increasingly call for the US-based research administrator to work with their counterparts in other countries, who must meet their own regulatory requirements and who may not be familiar with the demands faced by the US-based administrator.

2.2 The building blocks of a research infrastructure.

Research intersects and interacts with the other two major pillars of every academic institution: teaching and service (Chronister & Killoran, 2011). In the case of the SONHS, research and teaching intersect when faculty investigators bring their research skills and findings into the classroom on a daily basis. Similarly, much of the research conducted by SONHS faculty is service-oriented, addressing the health and social needs of the surrounding community and developed and implemented in partnership with community-based entities. Because of the close interweaving of research, teaching and service, a strong research administration infrastructure not only supports research, but also helps to educate students and to benefit the community.

Chronister and Killoran (2011) identify nine key functions of an effective research infrastructure. These are: (1) capacity building and marketing; (2) proposal development and submission; (3) award negotiation and acceptance; (4) research protections and regulatory compliance; (5) project management; (6) financial management; (7) intellectual property and technology transfer; (8) research administration support; and (9) institutional research administration infrastructure management.

2.2.1 Capacity building and marketing.

Capacity building helps to prepare faculty members to pursue funding opportunities successfully, while marketing strategies are aimed at increasing the visibility of the

institution and enhancing its reputation. The stronger the reputation of the school, the more likely that a proposal will be funded. Likewise, as faculty members bring in greater numbers of grants and contracts, successfully implement them, and disseminate their findings, the reputation of the institution is strengthened.

The research administrator must be familiar with areas of research interest and expertise among the faculty. One strategy is to maintain a user-friendly database that faculty can easily keep current with information on their research interests, areas of expertise and accomplishments. This data can be used to match faculty with funding opportunities, to put together interdisciplinary teams within the institution, or to facilitate faculty identification by outside entities in need of their specific expertise. Similarly, the research administrator should maintain a database of institutional resources and facilities in a continuously updated format that can be used by faculty to identify resources they may need for a funding application, as well as to provide them with language they can use in their proposals (Chronister & Killoran, 2011).

The research administrator should also develop an operational structure (1) to keep abreast of potential funding opportunities, along with their requirements and deadlines, and (2) to disseminate this information to faculty who may be interested or qualified in pursuing the opportunity. Faculty should also be aware and informed about the specific supports and resources available to them through the office of research administration that can help them to develop and submit their proposals. These supports should include assistance in coordinating complex interdisciplinary, inter-institutional, and international research projects. These collaborations have their own unique challenges for the research administrator, including issues related to technology transfer, ownership of intellectual property, and communication between

entities that may have very different organizational cultures (i.e., profit-driven vs. non-profit) (Chronister & Killoran, 2011).

Marketing efforts aimed at enhancing the institution's reputation and standing can include: issuing press releases about new grants, awards and achievements; showcasing the ways that the institution is benefiting the welfare of the community through its research, education and service projects; and, disseminating an annual report that focuses on research-related accomplishments. Within the institution, newsletters and other communications can be used to highlight faculty achievements and to ensure that faculty are informed about the research infrastructure and other institutional resources available to help them pursue their research (Chronister & Killoran, 2011).

2.2.2 Proposal development and submission.

At the heart of the research administration infrastructure is support for the development and timely submission of research proposals. A well-conceived study and well-written proposal will ease the way to a smooth and successful implementation; conversely, an ill-conceived project may still be funded, but may also bring with it a host of administrative and fiscal woes that will prove a challenge to the principal investigator and the research administrator throughout the life of the project, and may ultimately endanger the reputation of the research team as well as of the institution (Chronister & Killoran, 2011).

Budget development requires not only the fiscal knowledge and skill of the administrator and her staff, but relevant information specific to the research being proposed and to its funding needs, and technical resources such as databases and software to construct the budget. It is crucial to work closely with the principal investigator to ensure the budget

covers all personnel, equipment, materials and other aspects of the study. A poorly-designed budget may lead to financial loss for the institution, which is committed to meet the implementation costs of the project (Chronister & Killoran, 2011).

Preparation and submission of proposals. Research administrators can develop workshops for faculty members and other staff to learn the basics of how to write a proposal, and can provide them with resources such as mentoring by senior faculty, professional editing, pre-written material for standard sections (e.g., institutional resources), writing templates, and monitoring of submission protocols and deadlines. While writing the proposal narrative ultimately is the responsibility of the faculty member, the research administrator must simultaneously ensure that documents such as representations, certifications and assurances are prepared and signed by the appropriate university officials, and coordinate with research administrators at other national and international entities in the case of multi-institutional and international proposals. Once the narrative, budget, supporting documents and other sections are ready, the research administration team kicks into high gear for the final stage – submission of the proposal. This stage must be extremely well-coordinated and detail-oriented to ensure that all sections are accurate, complete and compliant (Chronister & Killoran, 2011).

2.2.3 Award negotiation and acceptance.

The award negotiation and acceptance stage involves communicating with the funder prior to an official award being made, in order to submit a revised budget or scope of work, to address questions and concerns, or to provide additional compliance information (i.e., “just-in-time” documentation). The research administrator will also be called on to process proposals that were not funded, including obtaining review information that might be used to revise and resubmit the proposal if that is possible. When the award is accepted, the study enters the post-

award phase. The research administrator immediately begins to set up internal accounts and structures to support the project implementation, including assigning of personnel, space and equipment as needed, and making sure that the faculty recipient understands all of the project's administrative and fiscal requirements and limitations (Chronister & Killoran, 2011).

2.2.4 Research protections and regulatory compliance.

Once the project is ready to launch, the research administrator works closely with the principal investigator to ensure that all stages of the study are compliant with federal regulations and other funder exigencies and that the study is implemented according to the highest ethical standards. These functions include (1) obtaining approval to conduct the study from the Institutional Review Board (IRB) for the Protection of Human Subjects; (2) addressing and resolving potential conflicts of interest (for proposals to the National Institutes of Health, this step is completed at the time of proposal submission); (3) maintaining research integrity by ensuring that all research staff are trained in the “responsible and ethical conduct of research”; (4) ensuring that personnel are able to report concerns and that any concerns or infractions are investigated; and (5) ensuring the health and safety of all personnel (Chronister & Killoran, 2011).

2.2.5 Project management.

Project management entails diverse responsibilities such as (1) providing support to principal investigators so that they are relieved of excessive administrative demands and able to focus on study implementation; (2) facilitating the hiring of personnel, processing personnel changes, and tracking and reporting personnel effort on the funded project; (3) managing purchase requisitions and making sure that all purchases are allowable and in compliance with the budget; (4) managing subawards and subcontracts, including reviewing proposals from the subrecipients, obtaining approval from the funding agency to subcontract the work, providing oversight to

the work product, and ensuring deliverables are met according to project timetables before payment is made; (5) managing payroll; and (6) monitoring the project to ensure that goals are met, including making sure that principal investigators understand the requirements for the timely completion of deliverables, and providing them with assistance as needed to ensure compliance (Chronister & Killoran, 2011).

Moreover, the research administrator must ensure that all required technical, financial and administrative reports to the funding agency are prepared and submitted on time. Principal investigators must be made aware of reporting requirements and deadlines, as the institution's reputation and ability to receive future funding may be placed in jeopardy if reports are often late. Finally, research administrators in today's research environment are increasingly being called on to manage large clinical trials. Clinical trials management is a growing area of research administration that requires specialized skills, such as implementing complex quality controls and the recruitment and tracking of large numbers of research participants (Chronister & Killoran, 2011).

2.2.6 Financial management.

Financial management entails (1) monitoring and approval of expenditures to ensure compliance with the budget; (2) financial reporting to the funding agency; (3) financial compliance and expenditure review; (4) obtaining agency approval for budget modifications as needed; (5) certifying personnel effort on each funded project; (6) ensuring that all financial records are ready to be audited at any time, and (7) closing out projects that have ended, including budget reconciliation and submitting final financial reports to the funding agencies (Chronister & Killoran, 2011).

2.2.7 Intellectual property and technology transfer.

As a “broker of innovation,” the research administrator plays a key role in helping to facilitate technology transfer so that innovative research findings are translated into programs and products that can help to address social, cultural and technological challenges. More specifically, the research administrator oversees the processing of invention disclosures, licensing and copyrights, and helps identify and market potential applications of research findings (Chronister & Killoran, 2011).

2.2.8 Research administration support.

The research administrator must also stay abreast of shifting federal regulations as well as institutional policies and procedures, and make sure that all funded research adheres to these strictures. Electronic research administration (ERA) can be used to facilitate all aspects of the research enterprise, from identifying and pursuing funding opportunities to managing funded projects. Finally, research administrators are charged with implementing federal and institutional research integrity training efforts, such as certification of personnel to work with human subjects, data management, responsible authorship, and research misconduct (Chronister & Killoran, 2011).

2.2.9 Institutional research administration infrastructure management.

This final category includes (1) property and facility management, including research equipment and space allocation; (2) calculation of administrative cost rates to ensure that all project costs are covered; (3) cash management; and (4) management and retention of project records for the time period required by the funding agency, including the appropriate destruction of records as needed.

2.3 Simulation Research.

While research in healthcare simulation is still at the “embryonic” stage (Rutherford-Hemming et al., 2016), the field of simulation research has nevertheless moved to a new level of rigor compared to where the field was even ten years ago (Palaganas et al., 2014 [Chapter 9.1]). Editors of indexed, peer-reviewed journals now have higher expectations and standards for the quality of work deemed publishable. For example, research questions and approaches that were of interest ten or more years ago are no longer considered to be novel or to contribute to the field in a meaningful way (Palaganas et al., 2014 [Chapter 9.1]).

Today’s simulation research spans two major areas of inquiry. Investigators are exploring “research *about* simulation (e.g., its technology, its pedagogy, its impact, and outcomes)” as well as “research that *uses* simulation as a tool to study other key things (e.g., clinician performance and decision-making, clinical processes, human factors of healthcare equipment)” (Palaganas et al., 2014 [Chapter 9.2]). Administrative infrastructure should be prepared to support both of these areas of research.

The literature supports the idea of organizing simulation research around interdisciplinary research teams, and of ensuring these teams have the capacity to address all areas of research, from seeking funding to the IRB process to study implementation and dissemination of findings. For example, infrastructure should provide training in and support for approaches that include quantitative, qualitative and mixed-methods approaches (Palaganas et al., 2014 [Chapter 2]).

A successful infrastructure plan will also support three major areas of inquiry as defined by Palaganas et al., 2014 (Chapter 9.2); these are process-based research (i.e., how the simulation activities and subsequent debriefing are developed and implemented), learning outcomes

research (i.e., understanding what participants learned in the simulation activity) and translational research (i.e., application of research findings to real-world clinical settings).

Faculty development in simulation research has been identified as a major need in both the nursing and simulation fields (Rutherford-Hemming et al., 2016). The nursing profession is currently undergoing a renaissance in which the profession is being redefined and redirected in unprecedented ways. Nurses are increasingly moving into doctoral-level, research and clinical faculty positions as well as into national and international leadership roles within the healthcare arena; indeed, in its groundbreaking report, “The Future of Nursing: Leading Change, Advancing Health,” the Institute of Medicine (IOM, 2010) has called for a significant increase in the numbers of doctorally-prepared nurses and for the profession to assume key roles as leaders and as independent practitioners in the healthcare field. This transformation of the profession is also creating new roles for nurses as independently-funded scientific investigators in the academic setting. At the same time, nursing as a profession does not have as extensive a history or trajectory in research as compared to other related fields (e.g., medicine, pharmacology, psychology); thus, the profession is in need of extensive capacity-building as well as research infrastructure support to help bring its emerging investigators and leaders fully into the 21st century scientific research community.

While models exist for the successful development of research competencies in nurses, barriers to such development are also articulated (Latimer & Kimbell, 2010). Faculty development of nurses to conduct simulation research can be guided by the Standards of Best Practice in Simulation (Rutherford-Hemming et al, 2016). Similarly, faculty development is also called for in the field of simulation research (Palaganas et al., 2014) and more specifically, Rutherford-Hemming et al. (2016) call for the development of nurse faculty competencies in

simulation research. Indeed, much like nursing, simulation research is itself a field that is undergoing rapid growth as 21st century technology expands the scope of potential research directions and applications.

3 PROCEDURE.

3.1 Research Infrastructure Planning Committee.

A Research Infrastructure Planning Committee was convened to review and approve a survey to assess the school's research infrastructure needs. The 4-member committee consisted of the school's Dean, the Associate Dean for Research, the Executive Director of Operations and Research, and the Operations Director of the International Academy for Clinical Simulation and Research. A total of 28 items were approved by the committee to assess 6 areas of interest, described below. The committee also approved the inclusion of 3 open-ended items to capture qualitative responses.

3.2 Institutional Review Board approval.

Once the survey items and format were finalized, an application was submitted to the University's Human Subjects Research Office (i.e., Institutional Review Board) for approval to conduct the survey. Expedited consideration was requested through a "Non-Human Subjects Research Determination Application." It was determined that as a quality improvement activity for the School of Nursing and Health Studies, the study met the requirements for an exempt protocol, and approval was granted to implement the survey.

3.3 Research Infrastructure Survey.

The 31-item Research Infrastructure Survey consisted of 28 quantitative items and 3 qualitative items. The quantitative items were grouped into 6 areas of interest: (1) Current Research Infrastructure (Items 1-9; 9 items); (2) Simulation Research Opportunities (Items 10-

15; 6 items); (3) Simulation Personnel Readiness (Items 16-18; 3 items); (4) Simulation Equipment Readiness (Items 19-20; 2 items); (5) Plan Readiness (Items 21-24; 4 items); and (6) Regulatory Knowledge (Items 25-28; 4 items). Each of these quantitative items was rated on a 5-point Likert scale with options ranging from Strongly Agree (5 points) to Strongly Disagree (1 point). An additional option, “I Don’t Know” (0 points), was included for each item. The following instructions were provided: *“Please indicate the degree to which you agree or disagree with the following statements.”* The 3 open-ended qualitative items (Items 29-31) asked respondents to share any additional needs or concerns they might have about the school’s research infrastructure, about simulation research, and/or about the Simulation Hospital.

The online survey was created using the University’s Qualtrics survey software and was reviewed by a statistician for accuracy. All of the items appeared on one page rather than requiring the respondent to click through several pages of items. This format was used because of a concern that some individuals might not respond if they could not see all of the items at a glance. The survey was distributed to the school’s 49 full-time research and clinical faculty members, as well as to 5 full-time, masters-level staff of the school’s International Academy for Clinical Simulation and Research, for a total of 54 potential respondents. Each individual received a message at their University email address which was generated by the Qualtrics program. The recipients were then sent a follow-up email to ensure that they had received the survey, upon which it was learned that in a number of cases the emails had been routed to the recipients’ spam, junk or clutter folders. A second email was then generated and sent directly through the University’s email system rather than through Qualtrics.

The email explained the purpose of the study and requested that recipients complete the survey; a live link to the survey was included:

As you know, we are building a Simulation Hospital. With the projected completion date of March 2017, it is expected that this facility will be a unique and valuable resource for research not only for SONHS, but for the University of Miami and faculty from other universities in the community and beyond. Therefore, we would like to conduct a needs assessment survey of the existing SONHS research infrastructure to find the gaps and to develop a comprehensive research administration plan for the Simulation Hospital. Your response to the below survey link will be appreciated.

The survey was made available on the Qualtrics platform for a period of 7 days. A total of 25 individuals (46%) submitted completed surveys during this time. An additional 3 individuals (5%) opened the survey but did not complete and submit it. The survey was closed after 7 days and the data was analyzed. Frequency distributions (n and percent) were generated for each of the 28 quantitative items. Responses to the open-ended items were reviewed and categorized as described in the Results section.

4 RESULTS.

The quantitative results presented in this section are organized according to the 6 major areas of interest detailed in the previous section. Please refer to Table 1 for the response frequency and percent for each of the 28 items. Responses to the 3 qualitative items are presented in section 4.7.

4.1 Current research infrastructure at the SONHS.

This area of interest consisted of 9 items that can be further subdivided into the 3 phases of a research study's "life cycle": proposal development and submission (items 1-3), study implementation and administrative management (items 4-6), and dissemination of findings

Table 1. Research Infrastructure Survey Item Responses: Quantitative Items (N=25)

Item	Strongly Agree n (%)	Agree n (%)	Neither Agree nor Disagree n (%)	Disagree n (%)	Strongly Disagree n (%)	Don't Know n (%)
CURRENT RESEACH INFRASTRUCTURE AT THE SONHS						
1. Supports faculty in identifying funding opportunities	8 (32)	6 (24)	3 (12)	3 (12)	2 (8)	3 (12)
2. Supports faculty in writing grant proposals	7 (28)	7 (28)	3 (12)	2 (8)	3 (12)	3 (12)
3. Supports faculty in the administrative process of submitting grant proposals	9 (36)	7 (28)	1 (4)	2 (8)	3 (12)	3 (12)
4. Supports faculty in implementing their funded studies	6 (24)	7 (28)	3 (12)	3 (12)	1 (4)	5 (20)
5. Supports faculty in preparing progress reports and final reports to the funding agency	5 (20)	6 (24)	4 (16)	2 (8)	0 (0)	8 (32)
6. Supports faculty in closing out their funded studies when the studies end	4 (16)	5 (20)	3 (12)	1 (4)	0 (0)	12 (48)
7. Supports faculty in writing papers for publication	6 (24)	10 (40)	2 (8)	2 (8)	2 (8)	3 (12)
8. Supports faculty in preparing presentations for conferences and other scientific meetings	6 (24)	7 (28)	3 (12)	3 (12)	1 (4)	5 (20)
9. Facilitates mentoring of early-career faculty to advance toward promotion and/or tenure	4 (16)	8 (32)	2 (8)	3 (12)	4 (16)	4 (16)
SIMULATION RESEACH OPPORTUNITIES						
10. There is a need for faculty to learn more about the field of simulation research	14 (56)	6 (24)	2 (8)	0 (0)	0 (0)	3 (12)
11. I am interested in learning more about the field of simulation research	12 (48)	9 (36)	1 (4)	2 (8)	0 (0)	1 (4)
12. There is a need for faculty to learn more about opportunities to engage in simulation research	13 (52)	7 (28)	3 (12)	0 (0)	0 (0)	2 (8)
13. I am interested in learning more about opportunities to engage in simulation research at the new Simulation Hospital	12 (48)	11 (44)	1 (4)	0 (0)	0 (0)	1 (4)
14. There is a need for faculty to learn more about how they might integrate simulation into their current or future research	13 (52)	7 (28)	4 (16)	0 (0)	0 (0)	1 (4)
15. I am interested in learning more about how to integrate simulation into my current or future research	12 (48)	6 (24)	5 (20)	1 (4)	0 (0)	1 (4)
SIMULATION PERSONNEL READINESS						
16. The current simulation team (faculty and staff) is enthusiastic about participating in research activities as part of their job	8 (32)	12 (48)	0 (0)	3 (12)	2 (8)	0 (0)
17. The current simulation team (faculty and staff) has the knowledge needed to participate in research activates such as data collection or data extraction	4 (16)	12 (48)	0 (0)	8 (32)	1 (4)	0 (0)
18. The current simulation faculty is capable of conducting simulation research	4 (16)	14 (56)	0 (0)	7 (28)	0 (0)	0 (0)
SIMULATION EQUIPMENT READINESS						
19. The current simulation equipment (simulators) is capable of capturing the data needed to conduct research	4 (16)	3 (12)	6 (24)	3 (12)	1 (4)	8 (32)
20. The current simulation technology (audio visual equipment, leaning management i.e. LearningSpace, Studio Code) is capable of capturing the data needed to conduct research	3 (12)	4 (16)	5 (20)	1 (4)	2 (8)	10 (40)
PLAN READINESS						
21. The Simulation Hospital includes research as a key mission	9 (36)	3 (12)	4 (16)	0 (0)	1 (4)	8 (32)
22. The Simulation Hospital plan includes consideration of research-related equipment/technology needs	7 (28)	3 (12)	0 (0)	3 (12)	1 (4)	11 (44)
23. The Simulation Hospital plan includes consideration of research-related staffing needs	3 (12)	2 (8)	5 (20)	2 (8)	0 (0)	13 (52)
24. The Simulation Hospital plan includes a strategy to teach the simulation team about regulatory issues related to simulation research	3 (12)	2 (8)	5 (20)	1 (4)	1 (4)	13 (52)
REGULATORY KNOWLEDGE						
25. The current faculty and staff of the SONHS possess the knowledge to conduct compliant research	7 (28)	10 (40)	3 (12)	1 (4)	1 (4)	3 (12)
26. Quality assurance is an important factor in simulation research	14 (56)	7 (28)	2 (8)	0 (0)	1 (4)	1 (4)
27. Data-sharing with other schools and institutions should be part of our simulation research enterprise	13 (52)	5 (20)	3 (12)	0 (0)	0 (0)	4 (16)
28. The University of Miami's IRB has the expertise to review and approve simulation research	5 (20)	5 (20)	3 (12)	1 (4)	1 (4)	10 (40)

(items 7-8). Item 9 explored respondents' views on the extent to which the school supports early career faculty advancement.

Overall, respondents viewed the current research infrastructure favorably as regards its support of faculty in identifying funding opportunities and writing grant proposals, with 14 (56%) respondents strongly agreeing or agreeing (SA/A) to these items, and in submitting grant proposals (16 SA/A; 64%). A total of 5 respondents (20%) strongly disagreed or disagreed (SD/D) with these items, while 4 to 12% (1 to 3 respondents) neither agreed nor disagreed (NA/D) or did not know (DK). A smaller number of respondents felt that the school supports faculty in implementing their funded studies (13 SA/A; 52%); in preparing progress and final reports to funding agencies (11 SA/A; 44%), and in closing out their grants (9 SA/A; 36%) while a somewhat higher number stated that they did not know if such support is provided for implementing studies (5 DK; 20%), for preparing reports (8 DK; 32%), or for closing out grants (12 DK; 48%). As regards support for disseminating study findings, a majority of respondents (16 SA/A; 64%) felt that the school provides support for writing papers for publication and for preparing scientific conference presentations (13 SA/A; 52%). In contrast, a small number of respondents felt that such support is not provided (4 SD/D; 16%), while 5 respondents (20%) did not know if support is provided for conference presentations. Finally, just under half of respondents (12 SA/A; 48%) felt that the school facilitates mentoring of early career faculty to advance toward promotion and/or tenure, as compared to 7 SD/D (28%) and 4 DK (16%).

4.2 Simulation research opportunities.

The second area of interest explored the extent to which respondents felt that there is a need for faculty to learn more about simulation research and research opportunities. The 6 items in this area can be grouped into 2 categories: (1) the degree to which respondents felt that there is

a need for faculty in general to learn more about simulation research, and (2) the degree to which each respondent expressed a personal interest in learning more about simulation research. A strong majority of respondents (20 SA/A; 80%) felt that there is a need for faculty in general to learn about simulation research, about opportunities to engage in simulation research at the new Simulation Hospital, and about how to integrate simulation into their current or future research, while no respondents disagreed with these statements. Most respondents expressed a personal interest in learning about simulation research (21 SA/A; 84%) and about opportunities to engage in simulation research at the new facility (23 SA/A; 92%), while 2 (8%) and no respondents disagreed with these statements, respectively. Finally, a majority of respondents (18 SA/A; 72%) were interested in learning about how to integrate simulation into their own research, while 1 respondent (4%) disagreed.

4.3 Simulation personnel readiness.

The third area of interest assessed the degree to which respondents agreed that the current simulation team possesses the enthusiasm, knowledge and capacity to conduct simulation research. While a majority of respondents strongly agreed or agreed that the simulation team is enthusiastic (20; 80%), knowledgeable (16; 64%), and capable (18; 72%), several respondents disagreed or strongly disagreed (5 [20%]; 9 [36%]; and 7 [28%], respectively).

4.4 Simulation equipment readiness.

Two items were used to explore whether respondents thought that the current simulation equipment and technology are capable of capturing the data needed to conduct simulation research. More individuals chose the “don’t know” option for both of these items than for any of the other response options; reporting that they did not know if the equipment (8; 32%) or the

technology (10; 40%) are adequate to the task. Only a minority of respondents agreed with either of the items (7; 28%).

4.5 Plan readiness.

This area of interest focused on 4 aspects of the existing plan for the Simulation Hospital: research as a key mission, consideration of research-related equipment/technology and staffing needs, and regulatory issues. Almost half of respondents felt that the existing plan includes research as a key mission (12; 48%) while 8 (32%) did not know. Responses to the other 3 items were notable for the large proportion of “don’t know” answers as compared to the other options. Eleven respondents did not know if the plan includes research-related equipment/technology needs; while 10 (40%) strongly agreed or agreed. Moreover, a majority of respondents (13; 52%) did not know if the plan includes research-related staffing needs or a strategy to teach the simulation team about regulatory issues, while only 5 (20%) strongly disagreed or agreed.

4.6 Regulatory knowledge.

The final area of interest focused on 4 areas of regulatory knowledge and capacity: compliance, Quality assurance, data-sharing, and human subjects. A majority of respondents strongly agreed or agreed that: the SONHS faculty and staff possess the knowledge to conduct compliant research (17; 68%); Quality assurance is an important factor in simulation research (21; 84%); and, data-sharing with other institutions should be part of the school’s simulation research enterprise (18; 72%), while few respondents disagreed or did not know. The last item explored whether respondents felt that the University’s IRB has the expertise to review and approve simulation research. Most of the responses were evenly divided between those who strongly agreed or agreed (10; 40%) and those who did not know (10; 40%).

4.7 Qualitative Items.

The survey concluded with 3 open-ended items that allowed respondents to articulate any additional thoughts: (1) Do you have any other needs or concerns related to the research infrastructure at the SONHS?; (2) Do you have any other needs or concerns related to simulation research and/or the new Simulation Hospital?; and (3) Is there anything else you would like to mention? A minority of respondents chose to provide comments. Responses to the qualitative items were clustered into 4 broad categories: (1) faculty support; (2) simulation team support; (3) technology; and (4) leadership and mentoring.

4.7.1 Faculty support.

Comments in this category called for more faculty support in the areas of writing and grant writing, staff support, and clarification of expectations for the role of clinical faculty in research:

“...it is going to be critical to get support in writing grants in order to fund research.”

“...it would help to have specific staff to support research activities in the simulation area...”

“Adequate and capable staffing as we lead simulation research.”

4.7.2 Simulation team support.

Respondents noted that the current simulation team would benefit from additional capacity building as well as from support to launch new simulation projects.

“There are some individuals able and willing to conduct research, but there is not the feeling that the current team meets this goal.”

“...use... current resources and research team to help the simulation team to start sim projects.”

4.7.3 Technology.

One respondent emphasized long-term infrastructure needs and the ability to capture data.

“...infrastructure that is capable of meeting...long term needs for simulation research.”

“...main concern is the ability to capture the needed data in a format that takes into consideration the needs of education but also research.”

4.7.4 Leadership and mentoring.

Finally, respondents stressed the need for high-level academic expertise and mentoring in simulation research, as well as the need for inter-school and interdisciplinary collaboration.

“...strong researchers with proven record to support faculty... to pursue simulation research.”

“...bring in more experts in the field of simulation research to build a team that is internationally recognized...”

“...capitalize on faculty connections with other schools to bring interdisciplinary projects to the sim lab.”

“We are building a unique facility with tons of potential – but the program and people will make or break the efforts.”

5 DISCUSSION

5.1 Research Infrastructure Survey.

The Research Infrastructure Survey yielded several helpful perspectives that contributed to the development of the Simulation Hospital Research Infrastructure Plan. Overall, respondents held a favorable view of the degree to which the school currently supports faculty in the process of pursuing grant funding, implementing research projects, and disseminating study findings through publications and scientific presentations. Their view was somewhat less favorable

regarding the school's support in preparing progress and final reports to funding agencies, in closing out their grants, and in facilitating mentoring of early career faculty to advance toward promotion and/or tenure, with less than half of respondents agreeing that these activities were supported. Notably, many respondents did not know if the school in fact provided support in preparing reports and closing out grants (32% and 48% respectively), suggesting that improved communication regarding available resources would be beneficial to faculty. Finally, in their qualitative answers, respondents emphasized the need to support faculty in writing and grant writing, and to provide them with staff support and with senior-level mentoring in the area of simulation research. These responses reinforced the need to ensure that current support continues, and that additional identified areas of support are addressed, as the school moves toward the inauguration of the Simulation Hospital.

Respondents expressed remarkably strong interest in learning more about simulation research, about opportunities to engage in simulation research, and about how to integrate such an approach into their own work, with 72% to 92% of respondents strongly agreeing or agreeing with these items. This robust level of interest in simulation research was encouraging and pointed the way towards including a comprehensive effort in the infrastructure plan to bring this much-desired knowledge to the school's faculty and research support staff.

A majority of respondents also held a favorable view of the current simulation team's enthusiasm for, knowledge of, and capacity to conduct simulation research (64% to 80% strongly agree/agree). At the same time, a substantial proportion of respondents (20% to 36%) did not agree that the team possessed adequate readiness; this view was also expressed in the qualitative comments. As noted above, this was the only one of the 6 areas of interest in which all respondents held a definite opinion about the simulation team's capacity and readiness. This

finding reinforced the need to ensure that the infrastructure plan provides for intensive and continued capacity building for the simulation team.

With the exception of one item (i.e., research as a key mission), substantially less than half of respondents felt that the school's simulation equipment and simulation plan demonstrated the readiness needed to launch and implement simulation research. However, it is notable that a sizable percentage of respondents (32% to 52%) stated that they did not know about the school's simulation equipment and plan readiness. This finding suggests that improved communication is urgently needed to ensure that all faculty are aware of current and planned technology resources as well as of the school's plans to integrate simulation research into the new facility.

A large majority of respondents (68% to 84%) endorsed 3 items related to regulatory issues (i.e., current capacity to conduct compliant research, importance of Quality assurance, and the need for data-sharing with other schools), while there appeared to be a lack of awareness (i.e., 40% "don't know") as to whether the University's IRB is prepared to review simulation research. This finding highlighted the need for educating faculty on regulatory matters and for collaboration with other institutions.

Finally, although there were few qualitative responses, the ones provided focused on the need for continued faculty support and mentoring, simulation team training and support, and a larger vision of the potential for world-class research and leadership in simulation research in the new Simulation Hospital. These comments called attention to big-picture issues (i.e., mission, vision, strategic planning) and to the need for concurrent education and capacity building to prepare faculty and staff to take their place in this emerging field.

5.2 Research Infrastructure Plan.

5.2.1 Leadership and management teams.

- The Dean of the SONHS recently created a new leadership position, Assistant/Associate Dean of Simulation Programs, and is in the process of interviewing candidates. This individual will work closely with the school's faculty and with the Executive Director of Operations and Research to develop and launch a comprehensive simulation research portfolio that will position the school as a leader in the field.
- A 7-member Simulation Hospital Research Oversight Committee (SHROC) will serve as an executive leadership team to oversee and support all aspects of research conducted at the facility. This committee will be chaired by the new Assistant/Associate Dean of Simulation Research, and comprised by the school's Dean, the Associate Dean for Research, the Executive Director of Operations and Research, the Operations Director of the International Academy for Clinical Simulation and Research, and 2 faculty members with expertise in simulation research.
- Faculty who wish to conduct simulation research will be required to submit a proposal to the SHROC, which will review and approve the scope of work and assess the staffing and other resources (e.g., space, equipment, technology) needed to conduct the research. The SHROC will meet on a monthly basis to review proposals and to monitor ongoing research studies.
- The SHROC will also provide leadership by continuing to develop and advance the school's simulation research agenda, ensuring that the research portfolio remains on the cutting edge of global simulation research trends. The SHROC will play a key role in identifying new research directions, and in engaging and supporting faculty to pursue these opportunities as leaders in the field of simulation research.

- A 2-day retreat will be held for the SHROC to meet with faculty and other personnel who are interested in simulation research, with the goal of developing a broad vision for research to be conducted at the Simulation Hospital, immediate and long-term research-related goals, and strategies for their achievement. The retreat will also explore goals and avenues for interprofessional and interinstitutional collaboration.
- The Executive Director of Operations and Research will meet regularly with the Associate Dean of Research and the new Assistant/Associate Dean for Simulation Programs to review funded and non-funded research, the progress of current research, and the status of dissemination efforts such as publications and scientific conference presentations. This leadership team also will conduct an annual review to fully evaluate the research operation (i.e., personnel, technology, outcomes). They will report their findings at the school's annual faculty retreat.

5.2.2 Data Management.

- The Dean will assign a statistician to work closely with faculty to identify and address data collection needs and challenges related to simulation research. Based on faculty input, the statistician will develop a formal data collection process to be used for all research conducted at the Simulation Hospital.
- The Executive Director of Operations and Research will create a database to track and manage all research activities conducted at the Simulation Hospital, including number of grant proposals in preparation, submitted, in negotiation, in the resubmission process, and funded or not funded. The database will also track the progress of active grants, including fiscal and personnel management and reports required by the funding agencies, and will follow grants through completion and close-out. In addition to tracking the progress of

grants, the database will provide an index of faculty productivity. The database will also include a portal that can easily be accessed by faculty members to post their research interests and update their information as needed. This data will be used to match faculty with simulation research opportunities. Faculty will use keywords to identify their interests, thus facilitating the process of searching the database.

5.2.3 Building administrative team capacity.

- Capacity-building for the research administration team will include training on: simulation research; regulatory, protocol and technology requirements; IRB/human subjects; and equipment needs.

5.2.4 Faculty support.

- The statistician assigned to the Simulation Hospital will provide statistical support as requested by faculty, including creating data collection mechanisms for individual studies, database management, and data analysis.
- The Dean will support travel funding (2 trips per year) for faculty engaged in simulation research to disseminate their study findings at scientific conferences and/or to pursue professional development opportunities in the field.
- A Simulation Research Seminar Series will be created to help faculty and simulation support personnel learn more about ongoing simulation research and emerging research opportunities. The seminars will feature prominent national and international guest presenters, and will also showcase research being conducted by SONHS faculty at the Simulation Hospital.
- A long-term plan to attract accomplished faculty with expertise in simulation research to the school will be developed and implemented. Recruiting senior-level investigators to join the

SONHS faculty will create opportunities for mentoring of early- and mid-career SONHS faculty to develop their own programs of simulation research. There will also be targeted efforts to attract senior investigators from other institutions to engage in collaborative, interinstitutional research at the Simulation Hospital, thus bringing diverse areas of expertise to the facility while creating additional mentoring opportunities.

5.2.5 Dissemination and marketing.

- The school will expand its current efforts that support faculty in disseminating their study findings to include all research conducted at the Simulation Hospital. The Simulation Hospital Research Oversight Committee will play a key role in ensuring faculty are aware of potential, simulation-oriented venues for publication and scholarly presentations.
- The Simulation Hospital’s website will showcase ongoing and completed research projects conducted at the facility. Press releases will be issued to call attention to important study findings, as well as to faculty and student achievements such as awards and recognitions. Brief items in the University’s weekly newsletter (e-Veritas) and longer articles in the school’s alumni magazine (Heartbeat) will provide more detailed information about research at the facility. Over time, these efforts will help to build and enhance the reputation of the Simulation Hospital as a world-class center for simulation research.

6. CONCLUSIONS

The Simulation Hospital research infrastructure plan includes provisions to support novel and cutting-edge applications of simulation research to ensure that the research being conducted is not only fundable and publishable, but most importantly, that it has the potential to make a meaningful contribution to the field. The research administration infrastructure for simulation research will encompass both “research *about* simulation” as well as “research that *uses*

simulation as a tool,” as defined by Palaganas et al. (2014) to ensure that the full scope of potential simulation research applications can be supported.

The unique characteristics of the Simulation Hospital’s setting, in a major multicultural city that sits at the crossroads of international scientific and technological innovation in healthcare, positions the facility to make novel and groundbreaking research contributions to the field. For example, simulation can be used to understand the challenges to interprofessional communication in healthcare teams, and this understanding can be used to improve communication and healthcare outcomes. The Simulation Hospital can take this research to a new level by examining the culturally-driven and/or language-based challenges to interprofessional communication in multicultural and/or multilingual healthcare teams.

The accelerating and parallel transformations of the nursing profession on the one hand, and the field of simulation research on the other, create a connection and a space for the emergence of innovative research questions and contributions. A well-designed administrative research infrastructure is key to supporting and maximizing the potential contributions that can emerge from the exciting confluence of two fields (nursing and simulation research) that are coming into their own as we move more deeply into this new century.

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Biography

Marina Alvarez has served as Executive Director of Operations and Research Administration at the University of Miami (UM) School of Nursing and Health Studies since 2007. She has more than 25 years of supervisory and fiscal management experience, primarily with National Institutes of Health (NIH) grants. Ms. Alvarez began her career as Director of the Office of Medical Sponsored Programs at the UM Miller School of Medicine, where she was responsible for the administration and management of all fiscal aspects of extramurally-funded grants and contracts for the school's portfolio. As Operations Director for the UM Miller School of Medicine's Center for Family Studies, Ms. Alvarez played a leadership role in the administration of several major clinical trials, including the National Institute on Drug Abuse-funded Florida Node of the Clinical Trials Network on Drug Abuse. She went on to direct the Research Administration Office of the UM Miller School of Medicine's Bascom Palmer Eye Institute before assuming her current position at the UM School of Nursing and Health Studies (SONHS), where she directs the school's grants management, logistical, technology and communication teams. The SONHS ranks 1st in Florida and 20th in the nation in NIH funding among schools of nursing, a ranking achieved during her tenure. Her goal for the next stage of her career is to launch an independent agency focused on the management of major clinical trials.